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Record of Honey Badger from Central Terai, Nepal

Dipendra Adhikari[1]✉, **Dibya Dahal**[1,3], **Tejab Pun**[1], **Sanyog Basnet**[2], **Sagar Dahal**[1,4], **Sanjan Thapa**[1,5]

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Author Affiliation:
[1]Small Mammals Conservation and Research Foundation, POB 9092, Kathmandu, Nepal
[2]Division Forest office, Palpa, Lumbini Province, Nepal
[3]Central Department of Zoology, Tribhuvan University, Nepal
[4]Florida International University, Miami, USA
[5]Key Laboratory of Conservation and Application in Biodiversity of South China, School of Life Sciences, Guangzhou University, Guangzhou 510006, China

✉**Corresponding author:**
Small Mammals Conservation and Research Foundation, POB 9092, Kathmandu, Nepal
Email: dipenadk2005@gmail.com

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ABSTRACT

Honey Badger *Mellivora capensis*, one of the least known mustelids in Nepal. Although occurring throughout Tarai, Churia and Inner-Tarai ranges of the country, hitherto known from just a few sites. During a camera-trap survey focused for biodiversity rapid assessment during May-June 2018 and another survey focused on Striped Hyena in January 2019, three individuals of the species were photographed from the forests in northern part of the Bara and Rautahat districts. The animal was camera trapped at *Shorea robusta* dominant mixed forest. Recent camera-trap surveys suggest that honey badger is widespread carnivore in the sal forests throughout southern lowlands of Nepal.

Keywords: Mustelid, camera-trap, carnivore, Bara, Rautahat, Sal forest, Nepal

1. INTRODUCTION

The fierce Honey Badger (Ratel) *Mellivora capensis* (Schreber, 1776), is found across Africa extending through Arabia, Iran to Turkmenistan and Indian Peninsula (Harrison & Bates 1991, Neal and Cheeseman 1996). Honey Badgers are large mustelids with its body size measuring just around 55-75 cm in length (Adult) whereas it is 9-16 kg (adult male) and 5-10 kg (adult female) in weight (Begg et al. 2003). The distribution goes to savanna, steppe, and desert habitats from South Africa in the south to Nepal in the North including India. These terrestrial animals are found in a wide variety of habitat that includes subtropical and tropical forest, riverine forests, grasslands and rocky terrains (Begg et al. 2005). These carnivores are nocturnal though also seen during day hours, occasionally in pairs. The gestation period is believed to be around 180 days and the litter size is two (Pocock 1941). The National Red List Series of Nepal categories Honey Badger as Endangered (Jnawali et al. 2011) and Globally as Least Concerned mammal on the IUCN Red List of threatened species (Do LinhSah et al. 2016). It has a wide streak of silver-grey from the crown to base of the tail with a short snout, small ears and large claws (Jnawali et al. 2011). There is paucity on information regarding its general ecology from Asia (Prater 1980). There are very few records of this species are available in Nepal (Thapa 2014, Baral and Shah 2008). Till date, only a few records are available for this species in the country (Thapa 2014, Jnawali et al. 2011, Baral and Shah 2008). The presence of Honey Badger is known from only a few areas in Nepal (Jnawali et al. 2011).

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Honey Badger is a solitary forager with a wide, largely carnivorous diet. While small mammals are the staple prey throughout the year, reptiles, scorpions, young of larger mammals and insects are seasonally important (Heptner et al. 1967, Gorbunov 1995, Baryshnikov 2000). It is a generalist with a board omnivorous diet. In a specific study done at Kalahari, Africa, diet comprised 59 species which was dominated by vertebrates (83%) including mammals up to the size of spring hare (2 kg), reptiles and birds followed by invertebrates (11% mainly bee larvae) and tsama melons (Begg et al. 2003). Honey Badger, least understood among small carnivore species found in Nepal is believed to feed on honey, small mammals, birds, reptiles and insects (Jnawali et al. 2011, Khanal and Baniya 2019). Honey Badger is commonly recognized as the most fearless animal in the animal kingdom. The article present the distribution record of Honey Badger based on the camera trap studies targeted for Striped Hyenas in the low land of Nepal and contributes to the information on Honey Badger.

Study area

The study area is located in southern plain; Bara (27.1341° N and 85.0649°E) and Rautahat districts (27.0487°N and 85.3136°E) of province 2, Nepal. The study site lies within Terai Arc Landscape (TAL), avast landscape covering an area of 49,500 km^2, extending from Bagmati river of Nepal to Yamuna river of India in the west. The study site is located at southern most region of the country i.e. on the foothill of Churia range. This area serves as corridor of mega fauna such as Asian Wild Elephant, One Horned Rhinoceros and Royal Bengal Tiger including herpetofauna and avian species. Most of the forest is Sal dominated mixed forest type and rest includes river bed, forest dominated by *Shorea robusta*, *Acacia catechu*, *Ehreatia laevis*, *Trewia nudiflora* and grasslands. Community forest and national forests of Bara (Singaul, and Dhansar) and Rautahat (Lamahaa, Gaidataar, Judibela, Chetnagar and Nunthar) were surveyed in the study period.

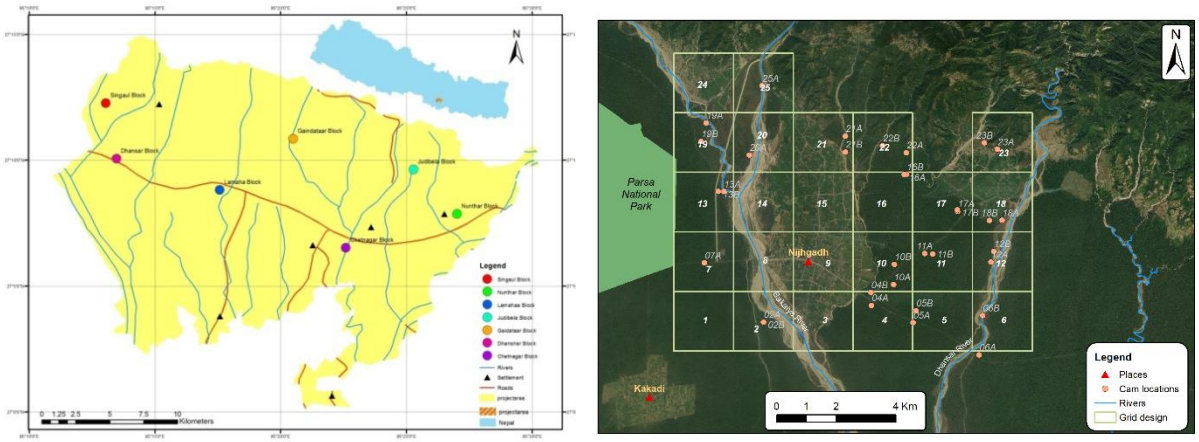

Figure 1 Map of study area depicting the study sites in Phase 1 and 2 respectively

2. METHOD

Camera Trapping

Camera trapping is a non-invasive technique for wildlife and landscapes monitoring. Along with the rapid development of modern ecological analysis and modeling tools, camera-trapping is being a vital role in wildlife research at various levels. Meanwhile, along with improvements in techniques, decreasing cost and increasing application interests this practice is adopted by many researchers and wildlife managers protected areas. The camera traps were used to survey the nocturnal animal carried out for the survey of Wild lives in the study area. The two phase camera trapping survey was conducted in May 2018 and January 2019. The first phase includes biological survey through camera trapping in seven blocks of central lowland which includes Bara and Rautahat districts of Province 2. Two Blocks in Bara district i.e. the forest areas of Singaul and Dhansar and five blocks in Rautahat districts i.e. the forest areas of Judibela, Lamahaa, Gaidataar, Chetnagar and Nunthar. Each Block consisted of 1 km transect where unpaired camera traps were deployed in a range of 200 m for three consecutive nights. Prior to the deployment of cameras, reconnaissance survey was conducted in each block and potential camera locations were identified on the basis of seen pugmarks of wild animals in the study area. Likewise, unpaired camera traps in a range of 200 m for three consecutive nights in each transect. Ten units of motion sensor camera traps were deployed for three consecutive nights targeted for entire faunal survey of this area. For each

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camera trap stations, cameras were deployed in the evening and pulled out in the next morning due to security threat issue of camera traps.

As a survey targeted to striped hyena *Hyaena hyaena* camera-trapping in Bara in second phase uses a grid size of 2 × 2 km^2. A pair of camera-traps was installed in each camera trap station in each cell for 7 consecutive nights. In total, 581 camera-trap stations were surveyed in two blocks. Camera-traps were installed after intensive sign survey to select the optimal stations. The latitude, longitude and altitude of each station were recorded by handheld GPS (Garmin 62S) under the WGS 1984 datum in both surveys. Altogether, seventeen grids were monitored by camera traps with thermal and motion sensors Covert illuminator, 12 MP, IR Mossy Oak High Power Infrared LED, Bushnell, Covert, Loreda, Scout Guard, Cuddie Back, Bushnell and Spartan). Camera traps were deployed every evening and pulled out next morning due to security threat. Each grid was monitored for 7 nights. The first deployment was conducted in 11 grids (Grids: 2, 4, 5, 6, 7, 10, 11, 12, 17, 18 and 23) from 10th-18th January 2019 and second deployment was conducted in 7 grids (Grids: 13, 16, 19, 20, 21, 22, 25) from19th-26th January 2019. Camera-traps were set 45 cm above ground with the two cameras of a pair 4-6m apart. Camera-traps were operated day and night without any bait. A pair of camera traps were lost from the cells during the survey period. In overall, we conducted our survey just away from Parsa National Park in the west to Bagmati River in the east. The distribution records of Honey badger in Bara and Rautahat were also obtained from biodiversity survey of May 2018 and striped hyena targeted camera-trapping surveys in January 2019.

3. RESULT

In May 2018, 210 camera trap nights' survey was carried out in seven different blocks of 1 km transects. In total, honey badger was recorded from one camera-trap station in the study area. Likewise, in January 2019, 238 camera-trap-nights spread across camera trap stations recorded honey badger only once. Both photographs were camera trapped by Covert brand camera trap in May 17, 2018 and by Bushnell brand camera trap in January 12, 2019 from Sal dominated mixed forest. The forest was denser and bushy during the survey of January 2019. Besides honey badger, our camera traps recorded different species of mammals such as common leopard, Golden Jackal, Striped hyena, Bengal fox, Large Indian Civet, Leopard cat, Wild Boar, Small Indian Civet, common palm civet, Rhesus macaque, Large Indian Civet and Porcupine, Blue bull, spotted deer, barking deer etc.

Table 1 Honey badger camera trap records in Bara- Rautahat Forest, 2019

Date	Station	Latitude N	Longitude E	Altitude (m)	Habitat Type
May 16 2018	Dhansar	27.15991	85.24096	156 m	Sal Dominated
Jan 12 2019	Dhansar	27.16506	85.21913	159 m	Sal Dominated
Jan 16 2019	Dhansar	27.165676	85.22248	159 m	Sal Dominated

Photo: Camera trap image of Honey Badger in central terai

Our camera traps deployed in Janajyoti Community forest, Bara captured images of honey badger during our survey period. The survey conducted in May 2018 recorded male honey badger whereas sexing is difficult due to blur image in second image in second phase of our survey. Both images capturing camera traps were placed at the fire line of the forest, among which male Ratel was photographed nearby shallow water source where water was collected due to rainfall 2 days earlier only. On the basis of field

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observation and images obtained in camera traps, this area was found highly disturbed by cattle grazing people and firewood and fodder collectors from nearby village. The road that leads to Singaul bisects forest was found disturbed due to human movement and scarcity of waterholes is next concerning issue.

Previously the record of this species has been reported from all the protected areas (PAs) of lowlands of Nepal except Koshi Tappu Wildlife Reserve and Banke National Park and from Kailali and Dang (outside PAs). This paper presents new record of honey badger in southern lowland away from PA adjoining to Parsa National Park i.e. around 4 km far from the study area and explores more about the species. Though, nationally assessed as endangered species, there is paucity of information on the species ecology, behavior and diet. It indicates the necessity of small carnivore targeted survey in and outside PA's for distinct and adequate database and information.

Ethical approval

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Conflicts of interests

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

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